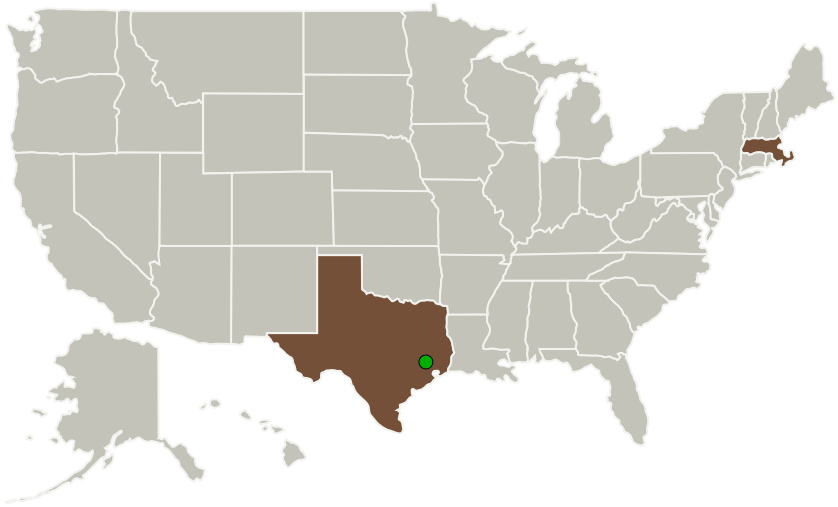
Silver Ion Biocide Delivery System for Water Disinfection, Phase I

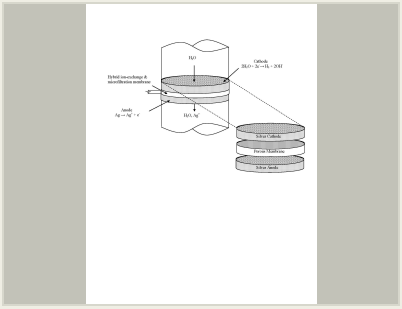
Completed Technology Project (2013 - 2013)

Project Introduction

U.S. space exploration missions have long considered returning to the Moon and exploration of Mars that challenge life support systems. For these long duration missions, NASA is interested in replacing the iodine water treatment system with ionic silver. Although iodine treated water has been used successfully with the International Space Station, its use requires that the iodine be removed before being consumed by astronauts due to its adverse effects on the thyroid. For long duration exploration missions, minimal mass systems are desired that lessen logistical supply requirements for storing and distributing potable water. In particular, it is imperative that an effective biocide is used that prevents microbial growth, biofilm formation, and microbially induced corrosion in the water storage and distribution systems. To address these needs, Reactive Innovations, LLC proposes to develop an electrochemical silver ion generator that produces an effective biocide concentration throughout the water storage and distribution system. The generator and system control will also minimize spurious deposition of silver on the wetted components of the water system maintaining a viable biocide activity to prevent biofilm growth. Materials compatibility testing will be examined with the generator to assess long duration operation.

Primary U.S. Work Locations and Key Partners





Silver Ion Biocide Delivery System for Water Disinfection Project Image

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Organizations Performing Work	Role	Type	Location
Reactive Innovations, LLC	Lead Organization	Industry	Westford, Massachusetts
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
Massachusetts	Texas

Project Transitions

May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140398)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Reactive Innovations, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Michael C Kimble

Co-Investigator:

Michael C Kimble

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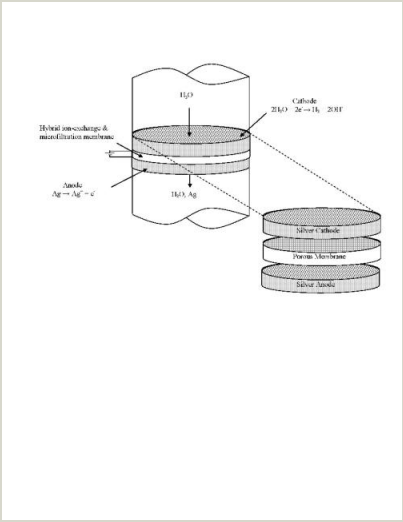
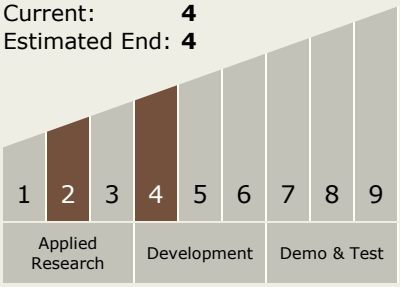
Images



Project Image
Silver Ion Biocide Delivery System for Water Disinfection Project Image
(https://techport.nasa.gov/image/129170)

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.2 Water Recovery and Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System